THE RELIABLE SOLUTION TO INTERNET CONNECTIVITY AT SEA

TECHNICAL WHITEPAPER

eutelsat

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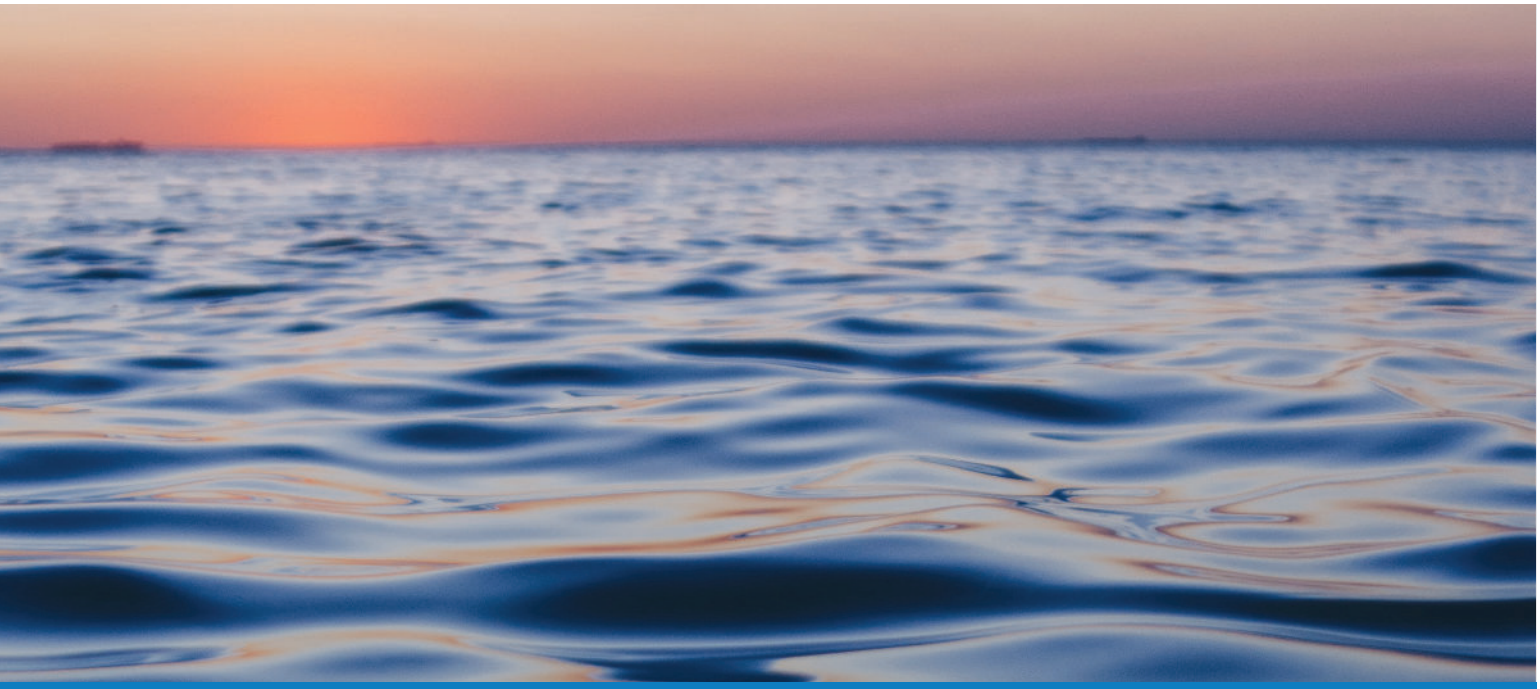


Reliable connectivity is fast becoming essential for today's maritime industry. It has many crucial benefits associated with it, including efficiency, morale boosting and safety. However, given the remote, mobile nature of the maritime environment, it's not all smooth sailing when you want to establish connectivity at sea.

Eutelsat ADVANCE Maritime solves this challenge by providing powerful, extensive coverage for maritime services around the world. It offers total flexibility on industrial bandwidth requirements while providing guaranteed performance, customised service and SLAs for high-end vessels. Today, it is the only solution that provides full regional coverage, with a unique, flexible commercial approach, making operations possible for a greater range of service providers worldwide.

Several operators have already selected Eutelsat ADVANCE to enhance their portfolios of connectivity services. Leveraging Eutelsat's powerful fleet of Ku-band satellites, Eutelsat ADVANCE is integrated into their offerings to serve a wide range of maritime market segments, including merchant shipping, passenger ferries, cruises and offshore operations.

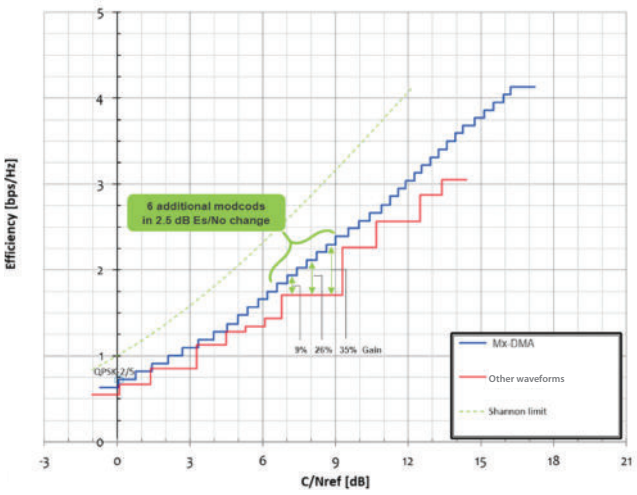
Connectivity Even in the Most Remote Areas of the Globe

Maritime service providers often work with clients who have large data requirements, in some of the most remote areas of the globe.

Eutelsat ADVANCE Maritime is a global Ku-band service, which relies on the mobility features of the Newtec Dialog® platform from ST Engineering iDirect. Using overlapping satellite beams, Automatic Beam Switching enables ships to connect to different beams while they are underway, without any manual intervention required and with reduced downtime on beam hand-over. Combined with the higher efficiency of the Dialog platform, high quality links can be operated even at the beam edge, for example, in the Antarctic region, where previously only C-band services were possible. The Dialog VSAT platform leads to more throughput per watt of antenna power and gives Eutelsat ADVANCE service providers the most advanced mobility maritime technology for their end-user requirements.

Flexible Solutions to Meet Evolving Needs

The granularity of Dialog Mx-DMA (R) MRC (multi-resolution coding) makes it ideal for mobility applications where you have a highly dynamic environment including factors such as beam contours and different antenna gain, for example. The graph shows Mx-DMA is much more granular when compared to the course modcod granularity of other technologies The fine modcod granularity of MRC allows the terminal to step up in efficiency more frequently and better exploit the additional spectral density across the whole Es/No range.



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ST Engineering

telenor | maritime

Telenor Maritime keeps the sailing ship Statsraad Lehmkuhl constantly connected during its worldwide research mission.

"The Statsraad Lehmkuhl needs to be constantly connected - while it's at sea or docking into one of the 36 different ports around the world. It's a challenge that most connectivity solutions could not overcome alone. Hybrid connectivity was the only solution, combining many different backhaul sources into one powerful connectivity platform. Additionally, the large amount of bandwidth required by its sensors and research apparatus would demand a generous budget and dedicated support. With ADVANCE, we can adjust our bandwidth and performance requirements as needed, bringing unprecedented cost-efficiency to remote satellite communications."

Flexible solutions to meet evolving needs

Connectivity requirements in the maritime industry are extremely evolutive, with seasonal and volume-based fluctuations the norm. Service providers need flexible solutions to meet their client's needs in the most efficient way.

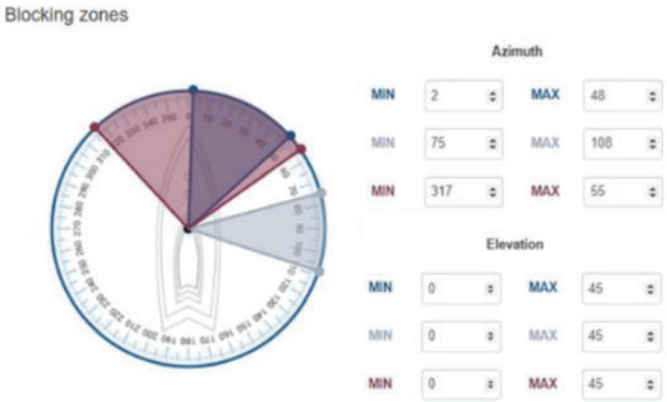
The Eutelsat ADVANCE platform offers service providers flexible commercial terms, which can scale up or down as demand evolves, no longer locking customers into long-term contracts. Designed with an on-demand approach in mind, the customer interface enables direct provisioning of ships and allows for short-term contracts. The Dialog platform fits perfectly with this philosophy, with its ability to cater for quick upgrades on the fly. For example, a customer with offshore vessels can rely on higher speeds during a core mission.

ADVANCE Maritime partner focuses on immediate client needs and reduces risk with short-term contracts.

An ADVANCE Maritime partner has been using the flexible Eutelsat service to run short-term upgrades on vessels more smoothly. Now, upgrades can be performed directly via the interface, taking just a few minutes rather than several days. The short-term contract scheme also allows them to reduce engagement risk and focus on the effective bandwidth demand time for the shipping company.

Let Business Logic Drive Beam Switching

Dialog's Mobility Manager provides a centralized beam switch decision logic, giving flexibility to mobility network operators to bring specific business logic in the beam switching decision making. This business logic can be optimized for different customer types and use various input parameters to make the switching decision. It is even possible to define the azimuth and elevation ranges for the vessel superstructure where blocking occurs. Then, based on the ship position, heading and satellite position the relative azimuth and elevation angles can be calculated and if this falls into the blocking ranges, the Mobility Manager will trigger a beam switching to an alternative beam.



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Ship-to-Shore critical for offshore communications

Connectivity between onshore and offshore facilities is crucial, particularly in the global offshore industry which continues to see increasing requirements for operational efficiency and crew welfare. With the development of renewable energy sources, in addition to the ever-growing oil and gas segment, autonomous control systems are a key driver of industry success. This makes offshore activities both safer and more efficient but requires significant bandwidth to manage operations and relay information between onshore offices and offshore vessels.

The Eutelsat ADVANCE global network solution is partnered with ST Engineering iDirect relying on its Dialog platform and its game-changing Mx-DMA waveform to enable greater two-way communications links, and higher throughput. The award-winning Mx-DMA return technology is the most efficient waveform available, making each return link more cost-effective. This is vital for bandwidth-hungry markets such as offshore, where reliable ship-to-shore communications is essential to run video conferencing, voice calls, IoT applications and more. All this requires a high-performance return channel, for which Dialog with Mx-DMA is perfectly suited.

Mx-DMA requires less bandwidth to sustain the committed information rate (CIR) when there is a fading event as well as the fact that the terminal will only use exactly the symbol rate that it requires to sustain the CIR making Mx-DMA more cost effective for service providers to support the CIR even for higher SLAs.

Newtec iDirect ST Engineering

Universal Satcom delivers unprecedented stability for symmetrical Offshore needs including communications, internet and crew welfare.

"The Dialog Mx-DMA return technology has helped us run speed levels from ship to shore with unprecedented stability. Where previous providers were offering SLA and service at CIR claimed to be reached 99%+, the ships on Dialog effectively reached this level of speed in return. The benefit for the customer was improved stability for VoIP and other sensitive application. This performance gives our clients peace of mind when it comes to their communication links during operations, and also improves the crew user-experience."

Ms. Reema Omari, CEO

Universal Satcom
Connect you everywhere

Future proof your operations

As the maritime industry becomes increasingly digitalized, and the economic environment ever more challenging, a reliable communication system on board is not only essential for safety but can also improve the efficiency of vessel management systems, saving time and money. Two-way applications like Team Viewer or Zoom suffer the effects of jitter and latency, and evolving data demands require increasingly intelligent ways to manage traffic on the network but replacing existing technology can be both cost- and time-intensive.

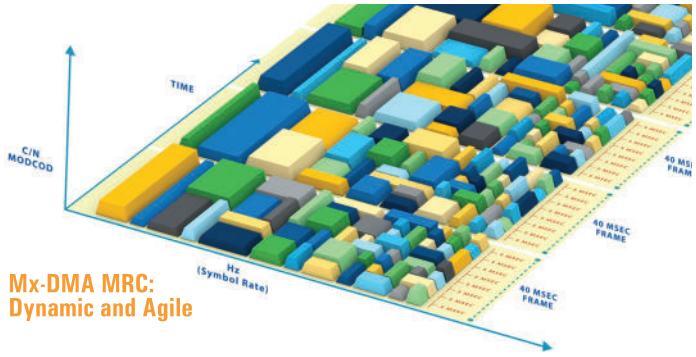
The Dialog platform's Mx-DMA waveform lowers latency and jitter, for better two-way video communications, and delivers greater symmetry for a range of data requirements. This is key for many applications in the marine environment. Mx-DMA enables higher throughput per given watt of antenna power, meaning that customers can see an instant improvement in throughput without having to replace their existing antenna systems.

Lower Latency and Jitter for Two-Way Comms and Greater Symmetry

Mx-DMA MRC was designed to seamlessly adapt to changing network traffic and link conditions, without introducing TDMA-like jitter and latency maximizing the utilization of available bandwidth resources. It is a self-organizing return technology that supports the deployment of large amounts of terminals with mixed service types, operating at industry-leading efficiencies at the lowest possible cost.

Based on return traffic demand, QoS settings and link conditions, Mx-DMA MRC adjusts the frequency plan, symbol rate, modulation, burst length, code block size, and power in real-time for every terminal in the network. All of this happens in a fully self-organizing way. There is no need for cumbersome trade-offs in predefining return carrier plans for a mix of terminal and service types, associated with MF-TDMA return technologies, as Mx-DMA MRC orchestrates the allocation of the available capacity automatically. This alleviates the downsides of predefined carrier planning such as penalties to efficiency as a result of oversized carriers, lower fill rates and utilization, and congestion.

This results in Mx-DMA MRC return technology being able to support the delivery of a mix of different traffic profiles in shared return capacity. Terminals with a steady traffic demand will operate like a SCPC link, with slowly varying transmission parameters depending on link conditions, but will seamlessly share capacity with highly overbooked terminals carrying bursty traffic. Terminals not passing traffic will log-off and restart transmission with an unsolicited logon mechanism when needed. This means that there is no idle capacity consumption.



Mx-DMA MRC:
Dynamic and Agile

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Nearshore Networks reduces latency for crew welfare and connectivity during navigation onboard passenger vessels

"We have experienced a significant reduction in latency in the network. Previously networks were often reaching 850 ms and above. The Dialog based service has brought us to 600 ms sharp. This is a big difference. It allows our demanding offshore customer to run voice calls, video, operational apps more smoothly. Latency sensitive applications such as real-time monitoring of well flows and fuel consumption will see notable improvement. The result is lower support involvement from our support team and increased SLA performance."

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Find out more about Eutelsat ADVANCE at
www.eutelsat.com/eutelsat-advance.html

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